

Remarks

Claims 1-20 are pending in the application. Claims 1-12 and 14-20 were rejected and claim 13 was objected to. Reconsideration of the claims is respectfully requested. No new matter has been added.

Rejection Under 35 U.S.C. § 103

Claims 1-5, 7 and 8 were rejected under § 103(a) as being unpatentable over U.S. Patent No. 5,987,903 issued to Bathla (hereinafter "Bathla '903"). A *prima facie* case has not been established for the rejection of claim 1. Claim 1 recites a system for assessing a refrigerant charge level in a vehicle air conditioning system. The system includes "a first sensor for providing a cooled air temperature signal, a second sensor for providing an ambient air temperature signal, a third sensor for providing an ambient air humidity signal, a fourth sensor for providing a compressor cycling signal, a processing module for determining a refrigerant charge level as a function of signals from the first, second, third, and fourth sensors, and an indicator for indicating that the level of refrigerant charge is acceptable if the refrigerant charge level is greater than a threshold value." Bathla '903 does not disclose or remotely suggest the combination recited in claim 1. In the Office Action, the Examiner stated that temperature sensor 16 was a first sensor for providing a cooled air temperature signal (see Office Action, page 2). However, temperature sensor 16 is "positioned at the condenser output line of the system" and "measure[s] the temperature . . . of the refrigerant charge as it leaves the condenser" (see column 3, lines 13-17). Thus, temperature sensor 16 has no relation to the detection of air temperature. Similarly, Bathla '903 does not disclose or remotely suggest a fourth sensor for providing a compressor cycling signal. In the Office Action, the Examiner pointed to column 3, lines 6-8 for support. The cited passage merely states that "subcooling in the air conditioning system is also a function of the following parameters: compressor rpm, ambient temperature, ambient humidity, refrigerant charge, evaporation air flow, and air flow through the condenser." As such, this passage (1) relates to subcooling, not the prediction of refrigerant charge as claimed and (2) does not relate to compressor cycling as

claimed since compressor cycling (e.g., turning on/off of the compressor – see paragraph 0030) is not the same as compressor revolutions per minute. It follows that Bathla '903 cannot logically disclose or suggest a processing module for determining a refrigerant charge level as a function of signals from the first, second, third, and fourth sensors as claimed. For these reasons, a *prima facie* case has not been established and Applicants request that this rejection be withdrawn. Since claims 2-5, 7 and 8 depend on claim 1, a *prima facie* case has not been established for the rejection of these claims for the same reasons.

Even if a proper rejection was established for the rejection of claim 1, a *prima facie* case has not been established for the rejection of claim 2. Claim 2 recites “a second indicator for indicating that the level of refrigerant is unacceptable if the refrigerant charge level is less than the threshold value.” Bathla '903 does not disclose or remotely suggest the limitations of claim 2. Moreover, the Examiner has provided no arguments in support of this rejection. Thus, Applicants respectfully request that this rejection be withdrawn.

Even if a proper rejection was established for the rejection of claim 1, a *prima facie* case has not been established for the rejection of claim 4. Claim 4 recites that “the fourth sensor is a voltage sensor.” Bathla '903 does not disclose or remotely suggest the limitations of claim 4. Moreover, Applicants have not found any passage in the reference pointed to by the Examiner (U.S. Patent No. 6,293,114) that discloses or suggests a voltage sensor associated with compressor cycling as claimed. Thus, Applicants respectfully request that this rejection be withdrawn.

Even if a proper rejection was established for the rejection of claim 1, a *prima facie* case has not been established for the rejection of claim 5. Claim 5 recites that “the first, second, and third sensors are not disposed on the vehicle.” Bathla '903 teaches away from the present invention in that all sensors pointed to by the Examiner are disposed on the vehicle. Moreover, the system disclosed in Bathla '903 would be rendered

inoperative if its sensors were not disposed on the vehicle. For example, sensor 16 would not determine the refrigerant temperature exiting the condenser if it were not disposed on the vehicle and in direct communication with the refrigerant. For these reasons, Applicants respectfully request that this rejection be withdrawn.

Claims 6, 9-12 and 14-20 were rejected under § 103(a) as being unpatentable over Bathla '903 in view of U.S. Patent No. 5,481,884 issued to Scoccia (hereinafter "Scoccia '884"). These claims are discussed below.

Claims 6 and 9 depend on claim 1 and are therefore believed to be allowable for the reasons previously discussed. Even if a proper rejection was established for the rejection of claim 1, a *prima facie* case has not been established for the rejection of claims 6 or 9 since the Examiner has provided no arguments to support the rejection of either claim. Thus, Applicants respectfully request that this rejection be withdrawn.

A *prima facie* case has not been established for the rejection of claim 10. As previously discussed, Bathla '903 does not disclose or suggest the combination of sensors and associated signals as claimed. Scoccia '884 does not cure the deficiencies of Bathla '903. Thus, *prima facie* case has not been established and Applicants request that this rejection be withdrawn. Since claims 11-12 and 14-17 depend on claim 10, these claims are believed to be allowable for the same reasons.

Even if a proper rejection was established for the rejection of claim 10, a *prima facie* case has not been established for the rejection of claim 12. Claim 12 recites that "the first and fourth signals are sampled more frequently than the second and third signals." Bathla '903 does not disclose or remotely suggest the limitations of claim 12. Scoccia '884 does not cure the deficiencies of Bathla '903. The Examiner's argument that ambient temperature and humidity change less frequently than compressor cycling and cooled air temperature are simply not true in all vehicle operating conditions (such as during elevation changes, exit or entry of a vehicle from and enclosed area, etc.). Thus, Applicants respectfully request that this

rejection be withdrawn.

Even if a proper rejection was established for the rejection of claim 10, a *prima facie* case has not been established for the rejection of claim 14. Claim 14 recites that the first signal indicative of a cooled air temperature is provided by a temperature sensor disposed near a vent aperture in the air handling subsystem.” Bathla ‘903 does not disclose or remotely suggest the limitations of claim 14. Scoccia ‘884 does not cure the deficiencies of Bathla ‘903. Indeed, none of the sensors in Scoccia ‘884 are associated with a cooled air temperature. Scoccia ‘884 merely discloses “an ambient temperature sensor 44” and a “refrigerant temperature sensor 40” (see column 3, lines 66-67) that would be completely inoperative for their disclosed purposes if disposed proximate a vent aperture in an air handling subsystem. Thus, Applicants respectfully request that this rejection be withdrawn.

Even if a proper rejection was established for the rejection of claim 1, a *prima facie* case has not been established for the rejection of claim 17. Indeed, the Examiner has provided no arguments in support of this rejection. Thus, Applicants respectfully request that this rejection be withdrawn.

A *prima facie* case has not been established for the rejection of claim 18. As previously discussed, Bathla ‘903 does not disclose or suggest the combination of sensors and associated signals as claimed. Scoccia ‘884 does not cure the deficiencies of Bathla ‘903. Thus, *prima facie* case has not been established and Applicants request that this rejection be withdrawn. Since claims 19 and 20 depend on claim 18, these claims are believed to be allowable for the same reasons.

Even if a proper rejection was established for the rejection of claim 18, a *prima facie* case has not been established for the rejection of claim 20. Claim 12 recites that “the second and third signals are sampled less frequently than the first and second signals.” Bathla ‘903 does not disclose or remotely suggest the limitations of claim 20. Scoccia ‘884 does not cure the deficiencies of Bathla ‘903. As previously discussed, the Examiner’s argument that

ambient temperature and humidity change less frequently than compressor cycling and cooled air temperature is simply not true in all vehicle operating conditions. Thus, Applicants respectfully request that this rejection be withdrawn.

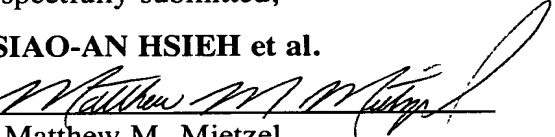
Conclusion

Applicants have made a genuine effort to respond to the Examiner's objections and rejections in advancing the prosecution of this case. Applicants believe all formal and substantive requirements for patentability have been met and that this case is in condition for allowance, which action is respectfully requested.

Respectfully submitted,

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